How to Identify IVs, DVs, and the scale for the DV

1. READ the research question. Try rephrasing the research question using the form:
   "does ___variable y____ depend on ____variable x_____"
   (the DV) (the IV)

   e.g. does typing performance depend on gender?
   the DV the IV

   Notice it would make little sense to say that one's gender depended on typing speed!

   You can also rephrase the research question into this format:
   "The study tested the effect of _____ on _____"
   the IV the DV

   e.g. The study tested the effect of ___gender____ on ____typing performance____
   the IV the DV

   note: it is possible for a research question to test the effects of 1-3 IVs on any number of DV's. Look for the word "and" in the research question.

   e.g. This study tested the effect of __gender__ AND __caffeine___ on __typing speed___
   IV #1 IV #2 DV #1
   AND ___errors___.
   DV #2

2. Identify the *levels* (i.e. groups, categories, conditions) of the IV. An IV *must* have at least 2 levels, but rarely will it have more than 4-5

   In the examples above, Gender (IV) has two levels: men vs. women
   Although not stated, Caffeine might have 3 levels: 0 mg vs. 30 mg vs. 300 mg

3. Determine the scale of measurement for the DV: nominal, ordinal, interval, ratio

   You'll need to consider how the DV was measured and then assigned numbers.

   If the DV is measured in such a way as to give you a formal score, then it is likely to be interval or ratio.

   E.g. typing performance score as measured by # words correct in 1 min – the number of errors = ratio. E.g. typing performance as measured by a score on a Likert scale where 1 = poor, 2 =

good, 3 =very good, 4 = excellent = interval (Likert scales are almost always considered to be interval).

If the DV is measured in such a way as to create unordered/unranked categories rather than scores, then it is probably nominal.

E.g. Does clinical diagnosis (depression, OCD, multiple personality) depend on gender? Here, clinical diagnosis (the DV) was measured in such a way as to create categories that are not ordered (unlike the Likert scale where the categories are rank ordered). Numbers are assigned (1 = depression, 2 = OCD, 3 = multiple personality) but the numbers assigned are arbitrary. That makes clinical diagnosis nominal.

DV's and the special case of frequencies

Frequencies, in and of themselves, are considered to be ratio. They are "counts" that have a true zero and agree with reality. E.g. number of psych majors

When the DV is a <u>score</u> that is a frequency, then the DV is ratio

e.g. DV = number of correct answers on a test, number of miles walked, number of hours spent studying

When the DV is a group of categories, we often count the number of people (or cases) within each category. But the DV itself is still nominal.

e.g. Does clinical diagnosis (DV) depend on gender (IV). "Clinical diagnosis" could be assigned numbers, but they would be arbitrary. This DV is nominal.

	Depression	OCD	multiple p
male	f	f	f
female	f	f	f

In this example, we are computing frequencies FROM the IV and DV. The frequencies themselves are not the DV.

Finally, some questions are about just ONE variable. E.g. are there equal numbers of men and women in the room? Is the number of students within each college (science, HSS, education) the same? Although you are comparing the number of people in each category (i.e. you are comparing frequencies), the underlying variable (e.g. sex, college) is nominal.